

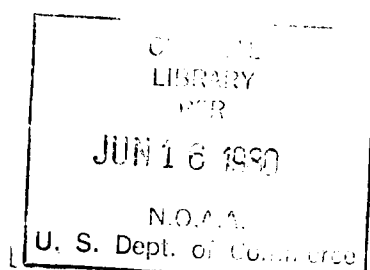
GOVERNMENT OF INDIA
METEOROLOGICAL DEPARTMENT

INDIA WEATHER REVIEW, 1960

Annual Summary

PART B

SNOWFALL



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CONTENTS

	Pages		Pages
Cold Weather Period	B-1	Post Monsoon Period	B-17
Hot Weather Period	B-8	Summary	B-22
South-West Monsoon Period	B-14		

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INDIA WEATHER REVIEW 1960

ANNUAL SUMMARY - PART-B

S N O W F A L L

This part contains a summary of the reports of snowfall in the mountain regions to the north of India based on (a) records of snowfall observations made at the observatories and (b) reports collected by local officers, from the local residents, headmen of villages or from travellers who have passed through the region and are transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground. The measurements are given in centimetres or tenths of metres. At places provided with raingauges the snow collected in the gauge is melted and measured as rain. This is indicated in the text and the measurements are given in tenths of centimetres. The heights of well known peaks are reported to nearest metres wherever available while the heights of mountain ranges etc. are reported in tens of metres.

Cold Weather Period - January & February

I - JAMMU AND KASHMIR

GILGIT DISTRICT

Gurez - Snow fell on six days in January and five days in February and total snowfalls amounted to 57 cm and 38 cm respectively. The depth of snow accumulation at the station was 25 cm and 90 cm at the end of January and February respectively. The snowfall was below normal in the period.

SOUTH ANANTNAG DISTRICT

Srinagar - There were two spells of snowfall in January one from 12th - 14th and second from 19th - 20th with snowfall depths 8 cm and 23 cm respectively. One light snowfall accompanied with rain and sleet was observed in February.

In January snowfalls occurred on three days on the peaks while in February light snow fell in the valley and the surrounding peaks. Snow accumulation was present on the surrounding peaks at the end of the period.

fall
Snow was below normal in both the months.

Patni Top (Batote) - In January there was one snowfall at the station proper, the depth of which amounted to 1.4 m. The snow line in this month descended below 3,100 m. There were four snowfalls in this month on the following ranges and peaks Eastern Pirpanjal (4086 m - 4109 m), Ensin Dhar (2704 m - 3353 m), Kud (2487 m) and Sansar (2286 m). The snowfalls on 19th and 20th were the heaviest of this month. In this month road between Srinagar and Pathankot was blocked for one week. All the high ranges and peaks were covered with snow at the end of January while accumulation at the station proper was 0.9 m. There was no snowfall during February at the station proper while snow accumulation was present only on the high peaks of Eastern Pirpanjal (4086 m - 4109 m) at the end of the period. Snowfall was above normal in January.

II - THE PUNJAB (I)CHAMBA DISTRICTPangi

Kilar (Pangi Range) - There were three snowfalls in January during the 2nd and 3rd week and four in February, total falls amounting to 48 cm and 46 cm respectively. The corresponding measured amounts of water (melted snow) were 43 cm and 55 cm. Snow line descended to a height 3050 m to 3350 m in January and 3660 to 3960 m in February. The depths of snowfall on the passes were as under :-

Name of Pass	Depth in metres in	
	January	February
Sach Pass	1.2 m.	0.9 m.
Chehni Pass	1.4 m.	1.2 m.

The same amounts are reported as accumulations at the end of each month. While total accumulations on these passes at the end of January and February were 2.7 m. and 3.7 m respectively. The snowfall during both the months was below normal.

Churah

Tissa - There were three snowstorms in the 3rd week of January and the total falls amounting to 30 cm. The snow accumulation on Sach pass (4420 m), Chehni pass (4570 m) and Bara pass (4570 m) was 3 m, 3.7 m and 3.7 m respectively. The snowfall was normal in January. No report was received for February.

Bhandal - There were two snowfalls in January at the station proper the total amounting to 75 cm. In January the depth of snowfall at Padhri pass was 1.8 m and the same amount is reported as accumulation at the end of the month. The snow accumulation at the end of February at Ganguhai, Padhri pass and other peaks at lower heights was 40 cm 50 cm and 15 cm to 30 cm respectively. The snowfall was below normal during the period

Tikri - Two snowfalls were observed above a height of 1525 m in both the months. Accumulation of snow was conspicuous above 2740 m in January and 1830 m in February. Snowfall was common on every cloudy day above 3660 m in January and 3050 m in February. The average depth of snowfall was 38 cm to 2.4 m at 1525 m in January and 28 cm to 3 m at 1829 m in February. The accumulation of snow at the end of January and February on prominent peaks and passes was as under :-

Peak or Pass	Accumulation in metres in	
	January	February
Drati pass	3.0	3.0
Chaurasi peak	2.7	2.7
Mehlu pass	2.1	2.1

Snowfall was above normal in January and below normal in February.

Chamba

Lower Chamba - There occurred three snowstorms in January, total amounting to 5 cm. No snow fell in February. The dept. of snow accumulation on well known passes in January and February was as under :-

Name of pass	Accumulation in	
	January	February
Basodhan	90 cm	15 cm
Duga Bhadarwa	1.1 m	23 cm
Juwali	1.2 m	30 cm

Snowfall was below normal in both the months.

Chamba - Snowfall was observed on four days in the 2nd and 3rd week on the passes in January the depth of snow in Chamba town amounted to 1.2 m. The accumulation of snow at the end of January was about 90 cm to 1.2 m. Snowfall was below normal in January. No snow fell in February.

MAHASU DISTRICT

Nichar - There were four snowfalls in January the total depth being 98 cm. The snow line descended to 3,500 m. As all the passes were impassable both in January and February the accumulation could not be estimated on them. No snow fell at the station proper in February. Snowfall was below normal during the period.

Chopal - There occurred five snowfalls in 2nd and 3rd week of January, the total amounting to 1.5 m. The snow line descended to a very low height in the region. (The actual height is not reported.) The depth of snowfall on the peaks like Chur Chandani, Chhattar, Talra, Chajpur Khirki etc. varied from 2.1 m. to 2.7 m and the same amount was reported as accumulation at the end of January. Accumulation at the station proper, was 1.5 m. Snowfall was above normal in January. No snow fell in February.

Kilba-Kailash - There occurred four snowfalls at Kilba in January, the total amounting to 84 cm. The snow line descended to heights between 2590 m and 2745 m. No snow fell in February.

Purbani - Snow fell on seven days in 2nd and 3rd week of January at the station, the total amounting to 76 cm. Snow line descended to heights between 2130 m and 2440 m. Accumulation of snow on high peaks was heavy. No snow fell in February.

Sangla - Snow fell on seven days in 2nd and 3rd week of January, the total amounting to 83 cm. The snow line descended to heights between 2440 m and 2590 m. Comparatively this year snow line was very low. No snow fell in February. Accumulation on high peaks was heavy in January and this year snow line descended below normal.

Phancha - Snow fell on six days in 2nd and 3rd week of January the total amounting to 1.1 m. Accumulation of snow was heavy on the peaks. No report for February was received.

Chini

Kalpar (Chini range) - Snow fell on seven days in 2nd and 3rd week of January, the total amounting to 65 cm. Accumulation of snow on well known peaks or passes could not be

estimated both in January and February as they were beyond approach. No snow fell in February. Snowfall was below normal during the period.

Rampur - Seven snow storms occurred in 2nd and 3rd week of January. The depths of snow on Hatu and Daranghati peaks were 1.8 m and 1.5 m respectively. While the corresponding accumulations at the end of the month on these peaks were 1.2 m and 0.9 m. No snow fell in February.

Suni - There were 5 snowfalls in the 2nd and 3rd week of January, amounting to about 2.3 metres. The peak Shali (height 3,050 m) was covered with 1.8 m of snow at the end of January. No snow fell during February. Snowfall in January was above normal.

Parala - Snowfall of 17 cm was reported in January. No report was received for February.

Kotkhai - There were five snowfalls during the 2nd and 3rd week of January. The depths of snow on the following peaks were as under :-

Name of peak	Depth of Snow in January
Naira (2286 m)	38 cm
Joshla (2438 m)	1.8 m
Mundroo (2438 m)	2.0 m
Khara Pathar (2591 m)	2.1 m
Bagi (2743 m)	2.3 m

Lower Bashahar range - In January snow fell on four days during the 2nd and 3rd week both at Khadralla and Bashla, the corresponding amounts being 3.0 m and 1.2 m. The same amount is reported as accumulation at the end of January at both the places. No snow fell in February. Snowfall was above normal in January.

Arki - Snow fell on two days during the 2nd and 3rd week of Bari Dhar and other high hills, the total amounting to 25 cm. The snow accumulation at the end of January at Bari Dhar was 15 cm. No snow fell in February. Snowfall was normal in January.

Solan - Snow fell twice both at the station proper and Karol peak in the 2nd and 3rd week of January and the corresponding total falls amounting to 6 cm and between 9 cm to 11 cm. There was no accumulation of snow by the end of January. Snowfall was below normal in January. No snow fell in February.

Rohru - Snow fell on two days in 2nd and 3rd week of January, the total amounting to 41 cm. The depths of snow accumulation at the end of January at Khadralla and Sangai were 1.8 m and 1.7 m. respectively. No snow fell in February. Snowfall was above normal in January.

Junga - Snow fell on two days in the 2nd and 3rd week of January, the total amounting to 28 cm. No accumulation of snow remained at the end of the month. Snowfall was above normal. No report was received for February.

Kumarsain - In January snowfall occurred once in the 2nd week and the depths of snowfall at Narkanda and Kumarsain were 1.5 m to 1.8 and 30 cm respectively. Accumulation at Narkanda varied from 13 cm to 15 cm. Snowfall was above normal in January. No report for February was received.

Jubbal - Snowfalls and snowstorms and depth of snowfall observed at the station in January were as follows :-

Period	Depth in cm.
13.1.1960 to 15.1.1960	61 cm
20.1.1960 to 21.1.1960	76 cm

The depth of snow at Chambi Kuar, the highest peak in the region was 2.1 m. in January. Same amount was reported as accumulation at the end of January at Jubbal while that at Chambi Kuar varied from 2.1 m to 2.4 m. Snowfall was above normal in January. No snow fell in February.

Jubbal Forest Division - Snow fell on six days in the region during January. The following table gives the total depths of snowfalls at different places in the region during January :-

Name of Place	Depth of snow in January
Banah (2195 m)	4.8 m
Kanda (2134 m)	3.7 m
Manalag (2530 m)	6.7 m
Lut Kari (2438 m)	5.6 m
Reoshti (2286 m)	4.8 m
Bhalu (1890 m)	2.8 m
Minus (853 m)	1.1 m
Sarain (2209 m)	0.8 m
Chopal (2342 m)	1.1 m
Mandha Ghati (2499 m)	0.9 m
Neoti (1554 m)	0.4 m
Bharach (3200 m)	2.4 m
Ori (3048 m)	2.0 m
Chhachpur (2112 m)	1.9 m
Jubbal (1891 m)	1.1 m
Tharoch (2081 m)	1.4 m
Bohg (2134 m)	2.5 m
Tikri (1963 m)	1.3 m
Deya (2225 m)	1.8 m
Halan (2103 m)	1.5 m
Pentra (1372 m)	0.7 m
Nerwa (1140 m)	0.7 m

Accumulation on higher passes and peaks were as under :-

Pass or Peak	Accumulation in January
Sarain (2209 m)	1.2 m

Pass or Peak	Accumulation in January
Mandha Ghati (2499 m)	1.2 m
Neoti (1554 m)	8 cm
Chopal (2342 m)	1.5 m
Banah (2195 m)	0.9 m
Kanda (2134 m)	0.9 m
Manalag (2530 m)	1.6 m
Lutkari (2438 m)	1.5 m
Reoshti (2286 m)	0.9 m
Bhalu (1890 m)	0.5 m
Minus (853 m)	15 cm
Barach (3200 m)	2.4 m
Ori (3048 m)	1.8 m
Chhachpur (2112 m)	1.5 m
Jubbal (1891 m)	0.9 m
Talra (3223 m)	2.4 m
Kanti Thach (2591 m)	2.0 m
Bohg Dhar (2286 m)	1.8 m

KANGRA DISTRICT

Nirmand - The following table gives the depths of snowfall during January and February and also the accumulation at the end of each month :-

Name of Peak	Depth of snowfall during		Accumulation in	
	January	February	January	February
Sirikhand	4.6 m	0.9 m	5.5 m	5.2 m
Chol	2.7 m	61 cm	2.4 m	2.1 m
Maghan	3.4 m	61 cm	2.7 m	2.4 m
Dundku	3.4 m	30 cm	3.0 m	2.4 m
Shikar	2.4 m	30 cm	2.1 m	1.5 m
Ramgarh	1.5 m	30 cm	1.2 m	0.6 m
Nohun	1.8 m	30 cm	1.5 m	0.9 m

The snowfall was above normal in January and below normal in February.

Seraj - The depths of snowfall in January and accumulation at the end of January and February on the peaks in the region were as under :-

Name of peak	Depth of snowfall in January	Accumulation of snow at the end of	
		January	February
Raghopur	2.1 m	1.8 m	1.5 m
Jalori	2.1 m	1.8 m	1.5 m
Sakirn	1.8 m	1.5 m	0.9 m
Lambri	1.5 m	1.2 m	0.9 m

Name of peak	Depth of snow-fall in January	Accumulation of snow at the end of	
		January	February
Shepakaru	1.5 m	1.2 m	0.9 m
Gargarasan	1.5 m	1.2 m	0.9 m
Tirth	2.1 m	1.8 m	1.2 m

No snow fell in February while snowfall was normal in January.

MANDI DISTRICT

Mandi Forest Division - Snow fell on six days in two spells in the 2nd and 3rd week of January. In February no snowfall occurred. The region depths of snow accumulation on well known peaks in January and February were as under :-

Name of peak	Depth of snow-fall in m. in	
	January	February
Shikari (3350 m)	2.0	1.5
Raigarh (2740 m)	1.5	1.5
Janjehli (1820 m)	1.2	1.1
Shiata Galoo (2740 m)	1.6	1.2
Tungasi (3050 m)	1.7	1.4

Snowfall was above normal in January and below normal in February.

III - Uttar Pradesh

TEHRI GARHWAL DISTRICT

Snow fell on four days in 2 spells during the 2nd and 3rd week of January. During the first two days of snowfall (i.e. 13th and 14th) snow line descended upto a height 1829 m and snowfalls were light. Snowfalls during 20th and 21st were abnormally heavy and the snowline descended upto a height 762 m. The depth of snow during January varied from 15 cm to 2.4 m and the snow covered the whole district at the end of January. Due to heavy snowfall, traffic came to a standstill nearly throughout the district. Snowfall was heaviest on the well known peaks viz., Surkanda, Nagtiba, Kedar Kantha, Bsndarpunch, Rajgarhi, Rahri, Ringali, Gangotri, Kanatol, Gajja and Thauldhar. Snowfall was above normal in January while no snow fell during February.

GARHWAL DISTRICT - There were two snowfalls during 2nd and 3rd week of January. Depth of first snowfall on 13.1.1960 varied from 1 cm to 1.5 m and the snowline descended upto 1524 m while that of the second fall on 21.1.1960 varied from 3 cm to 1.8 m and snowline descended to 610 m. Accumulation of snowfall at the end of January at a height 1676 m varied from 3 cm to 1.8 m. There was no snowfall during February. Snowfall was below normal for the period.

ALMORA DISTRICT - Snow fell on high peaks in Malla Danpur both in January and February. In January in Patti Chandaus depth of snowfall was 46 cm in villages and 1.8 m on mountains (height 2438 m). In the same month Malla Johar and Gorifat had two snowfalls and the accumulations were 15 cm to 1.2 m and 8 cm to 1.2 m respectively.

Accumulation of snow on well known peaks at the end of January and February were as under :-

Name of peak	Accumulation in	
	January	February
Kantela	0.9 m	15 cm
Kafini	0.9 m	23 cm
Bankatia	0.9 m	15 cm
Pindar	1.8 m	60 cm
Nanda Devi	2.1 m	75 cm
Sundhardhunga	1.8 m	30 cm

Snowfall was above normal in Malla Danpur, Malla Johar and Gorifat in January and below normal in Malla Danpur in February.

NAINITAL DISTRICT

Mukteswar - Snow fell on three days in 2nd and 3rd week of January total amounting to 33 cm. The total amount of water (melted snow) was 5 cm. The snowfall on two days extended to all the surrounding high peaks such as Naini Tal, Gagar etc. Snowfall was above normal in January. No report for February was received.

HOT WEATHER PERIOD - MARCH TO MAY

I - JAMMU AND KASHMIR

GILGIT DISTRICT

Gurez - Snow fell on eleven days in March and seven days in April, the corresponding amounts being 1.2 m and 15 cm. Accumulation at the station by the end of March was 1.2 m. which melted away by April. The accumulation on Razdhani Pass was 3.0 m by the end of April. Snowfall was above normal both in March and April. No report for May was received.

NORTH BARAMULLAH DISTRICT

Gulmarg - Snowfall was slight during May and accumulation of snow was present on peaks and passes. Snowfall in the month was above normal. Reports for March and April were not received.

SOUTH ANANTNAG DISTRICT

Srinagar - In March two snowfalls accompanied with rain and hail were experienced at the station the total precipitation amounting to 15 cm. Snow fell on eight days on surrounding mountains also. At the end of March snow accumulation was not present at the station proper but on top of hills and surrounding mountains at a height of about 2440 m. In April while no snow fell in the station proper light snowfalls were experienced on the surrounding mountains. In May no snow fell but accumulation of snow was present on peaks above 3050 m. Snowfall was above normal in March.

Patni Top (Batote) - In March snow fell on seven days on the following ranges. Eastern Pirpanjal (4086 m - 4109 m), Ensin Dhar (2704 m - 3353 m), Kud Peaks (2487 m.) and Sansar (2286 m.). At the end of the month snow was present on the high peaks of Eastern Pirpanjal range and Ensin Dhar. No snow fell both in April and May while accumulation was present on the high peaks of Eastern Pirpanjal range at the end of both the months. In May snowline descended upto a height 3658 m. and accumulation in this month was above normal.

LADAKH DISTRICT

Kargil - Light snowfall was experienced in May which amounted to 5 cm. Accumulation at the end of the month on Naktul and Hurker was 1.2 m. and 30 cm. respectively. Reports for March and April were not received.

Leh - Light snow fell in May which amounted to 3 mm. Accumulation on Khardong pass was 1.2 m. in the month. Accumulation was below normal.

Dras - In May snow fell which amounted to 16 cm. Surrounding peaks were covered with snow. Snowfall was below normal in the month. Report for March and April were not received.

II - THE PUNJAB (I)

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range) - Snow fell on eight days in March and three days in April. Total falls in March and April amounted to 56 cm. and 32 cm. while the corresponding amounts of water (melted snow) were 5 cm. and 4 cm. No snow fell in May. Accumulation on passes was as under :-

Name of Pass	Accumulation in		
	March	April	May
Sach Pass (4413 m.)	0.9 m	1.8 m	1.5 m
Chehni Pass	1.1 m	-	-

Snowfall was below normal in March, above normal in April and normal in May. In Simla snow fell on one day in March, amount being 13 cm. Snowfall at this time of year was experienced (22-3-1960) for the first time in ten years. Snowfall was unusual.

Churah

Tissa - There occurred fourteen snowstorms in March and four in April on high hills. In April snowline descended to a height 3050 m. The depth of snowfall on the passes in March and April was as under :-

Name of Pass	Depth of snow in	
	March	April
Sach Pass (4267 m.)	3.0 m	1.1 m
Chehni Pass (4877 m)	3.7 m	1.5 m

The same amounts are reported as accumulations on these passes at the end of March and April. No snow fell in May. Snowfall was above normal in March.

Bhandal - Three to four snowstorms were experienced in March and the depth during each storm varied from 8 cm to 13 cm. above a height 1370 m. There was no accumulation of snow at the end of March on Padhri Pass. No snow fell in May. Snowfall was below normal in both the months. Report for April was not received.

Tikri - In March four snowfalls occurred at a height 1370 m. Snowfall was however conspicuous at a height 2130 m. Snowfall was common on every cloudy occasion above 3050 m. The average depth of snowfall above 2135 m. varied from 8 cm. to 1.5 m. In April two snowfalls occurred at 3960 m. while snow accumulation was conspicuous upto 4570 m. Snowfall was common on every cloudy occasion above 3960 m. Average depth of snowfall varied from 23 cm. to 60 cm. while that on the highest peak varied from 28 cm. to 60 cm. In May one snowfall was observed at a height 3960 m. while accumulation of snow was conspicuous upto 4570 m. Hailstorms were observed on every cloudy occasion above 3960 m. The average depth of snowfall varied from 3 cm. to 8 cm. No accumulations were present below 2135 m. in March and 4570 m. both in April and May. Accumulation on peaks and passes in the region were as under :-

Name of pass or peak	Accumulation in		
	March	April	May
Drati Pass	1.5 m	60 cm	3 to 8 cm
Chaurasi Peak	1.2 m	90 cm	8 cm
Mehlu Pass	90 cm	90 cm	5 cm

Snowfall was below normal in March and May and above normal in April.

Lower Chamba - In March six snowstorms were observed on the well known passes of the range and the snowline descended upto a height 1830 m. Depths of snow on Basodhan, Duga, Bhadarwa and Juwalli were 25 cm., 36 cm., and 46 cm. respectively. No snow fell during April and May. Depths of accumulation of snow on well known passes were as under :-

Name of Pass	Depth of accumulation in		
	March	April	May
Basodhan	30 cm	36 cm	8 cm
Duga Bhadarwa	46 cm	90 cm	13 cm
Juwalli	53 cm	1.2 m	20 cm

Snowfall was above normal in March and accumulations below normal both in April and May.

MAHASU DISTRICT

Nichar - In March snow fell on two days in the fourth week the total amounting to 23 cm. By the end of the month all the passes were unpassable. Snowfall was below normal in March. No reports were received for April and May.

Chopal - On one day in the fourth week of March it snowed throughout the region and the amount varied from 15 cm. to 25 cm. The average depth of snow on high peaks was 20 cm. Depth of accumulation of snow at the station proper by the end of March was 13 cm. Reports for April and May were not received.

Phancha - Snow fell on three days in the second fortnight of March, the total amounting to 18 cm. Snow was present on the higher passes at the end of March and roads were blocked. Reports for April and May were not received.

Chini

Kalpar (Chini range) - Snow fell on seven days in March and one day in April, the corresponding total depths amounting to 89 cm. and 6 mm. The depths of snowfall and accumulation at the end of both the months on peaks and passes could not be estimated as they were beyond approach. Report for May was not received.

Rampur - There occurred four snowstorms in the 2nd fortnight of March and four snowstorms in April. Snowline descended upto a height 1830 m. in March and 2130 m. in April. The amounts of snow on Hatu and Daranghati were as under :-

Name of Place	Depth of snow in	
	March	April
Hatu	46 cm	23 cm
Daranghati	30 cm	23 cm

Accumulation at the end of April on both Daranghati and Hatu were 23 cm. No snow fell in May.

Kumarsain - In March snowline descended upto a height 1520 m. and the depth of snowfall at Narkanda varied from 90 cm. to 1.2 m. and the same amount is reported as accumulation at Narkanda. Accumulation at the end of the month was above a height 2130 m. Reports for April and May were not received.

Suni - Snow fell on two days in March. The total depth on Shali Peak (Ht. 2740 m. a.s.l.) was 25 cm. Areas above a height 1830 m. were covered with snow. There was no accumulation of snow at the end of the month as it melted away. No snow fell in May. The report for April was not received.

Kot-Khai - In March snow fell on four days on Naira Peak (2290 m.), Joshla (2440 m.), Mundroo Peak (2440 m.), Chambi Kupaar (2590 m.), Khara Pathar (2590 m.) and Bogi (2740 m.) and the total on each amounted to 30 cm. No snowstorm took place during this month. Snowfall was unexpected in March and it was of very dry type. Reports for April and May were not received.

Lower Pabar Range - In March snow fell on ten days at Khadrula and one day at Bashla, the corresponding amounts being 85 cm. and 5 cm. The same amounts are reported as accumulation at the end of the month at both the places. Snowfall was above normal in March. Reports for April and May were not received.

Solan - No snow fell in March. Reports for April and May were not received.

Arki - In March snow fell on one day on Karada Ghati, Bari Dhar and Dharti Ghati, the corresponding amounts being 15 cm, 6 cm. and 5 cm. Snowfall was above normal in March. No snow fell in April. Report for May was not received.

Jubbal - Snow fell on one day in March, the depth being 8 cm. Snow line descended to a height 1520 m. Accumulations at the end of the month at Jubbal proper and Chambi Kupa were 8 cm. and 30 cm. respectively. There occurred two snowstorms during April throughout the region. Report for May was not received.

Jubbal Forest Division - In March snow fell on six days in the region and snowline descended to a height 1520 m. The following table gives the total depths of snowfall on some important places in the region in March :-

Name of Place	Depth of snow in cm in March
Banah (2130 m.)	18
Kanda (2130 m.)	13
Manalag (2530 m.)	23
Lutkari (2440 m.)	20
Reoshti (2290 m.)	15
Bhalu (1890 m.)	4
Sarain (2209 m.)	5
Mandha Ghati (2500 m.)	15
Talra (3223 m.)	71
Ori (2743 m.)	91
Bharach (2900 m.)	48
Chhachpur (2130 m.)	20
Jubbal (1920 m.)	5
Chopal (2290 m.)	10
Khirkki (2620 m.)	20

The accumulation of snow on the following high passes and peaks was as under :-

Name of Pass or Peak	Accumulation of Snow in March in cm
Talra (3223 m.)	43
Manalag (2530 m.)	33
Lutkari (2440 m.)	30
Bharach (2900 m.)	38
Ori (2740 m.)	36
Khirkki (2620 m.)	33
Chopal (2290 m.)	30
Reoshti (2290 m.)	30
Mandha Ghati (2500 m.)	30

Snowfall was quite late this year and was above normal. Reports for April and May were not received.

Kilba - Kailash

Kilba - Snow fell on one day in March the amount being 15 cm. No reports were received for April and May.

Purbani - Snow fell on eight days in March, the total amounting to 98 cm. No reports were received for April and May.

Sangla - In March snow fell on seven days the total amounting to 99 cm. No reports were received for April and May.

KANGRA DISTRICT

Seraj - No snow fell at the station proper in March. The following table gives the depths and accumulations of snow on the well known peaks in March :-

Name of Peak	Depth of snow in March in cm.
Raghopur	60
Jalori	60
Sakirn	30
Lambri	30
Shepakaru	30
Gargarasan	30
Bashelu	90
Tirth	30

The same amounts are reported as accumulations at the end of the month. Reports for April and May were not received.

Nirmand - The following table gives the depths and accumulations of snowfall on important peaks in March :-

Name of Peak	Depth of Snow in March	Accumulation at the end of March
Sirikhand	1.2 m	4.9 m
Chol	60 cm	45 cm
Maghan	60 cm	60 cm
Dundku	60 cm	60 cm
Shikar	45 cm	30 cm
Ramgarh	15 cm	-
Nohun	30 cm	15 cm

Snowfall was below normal. Reports for April and May were not received.

MANDI DISTRICT

Mandi Forest Division - In March snow fell in the second fortnight on high peaks, amounts varying from 5 cm. to 15 cm. Snowfalls on Shikari (3350 m.), Raigarh (2740 m.), Jan-jehli (1820 m.), Shiatagalu (2740 m.) and Tungasi (3050 m.) were 1.2 m., 90 cm., 60 cm., 90 cm. and 90 cm. respectively. The same amounts are reported as accumulations at the end of the month. In April snow fell on Shikari (3353 m.), amount being 45 cm. The same amount was reported as accumulation at the end of April. No snow fell in May. Snowfall was below normal during the period.

Suket Forest Division - No snow fell in May even on passes or peaks. Reports for March and April were not received.

III - UTTAR PRADESHTEHRI GARHWAL DISTRICT

There were two snowfalls and snowstorms in March. First snow fall amounted to 10 cm. and the second varied from 15 cm. to 20 cm. and snow line descended upto a height 2440 m. and between 1830 m. and 2440 m. on the corresponding days. Snowfall in March was unusual and was heaviest on the well known high peaks such as Surkanda, Nagtiba and Dhanolti. Accumulation of snow at the end of the month varied from 10 cm. to 20 cm. Snowfall was above normal in March. No snow fell during both April and May.

GARHWAL DISTRICT

In March snow fell on seven days, the total depth varying from 3 cm. to 1.5 m. Snow line descended upto a height 1220 m. in this month. Same amount is reported as accumulation of snow at the end of the month above a height 1220 m. Snowfall in March was above normal. Reports for April and May were not received.

ALMORA DISTRICT

Snow fell on high peaks during March and April and snowline descended to a height 2290 m. in Malla Johar and Dahpur in March. Snow fell on three days on high peaks in May.

The depths of snowfall and accumulation at the end of March and April on the following peaks were as under :-

Name of Peak	<u>Snowfall in</u>			<u>Accumulation at the end</u>	
	March	April	May	March	April
Kautela	75 cm.	30 cm.	-	1.5 m.	1.2 m.
Kafini	1.1 m.	45 cm.	-	2.1 m.	1.5 m.
Bankatia	2.4 m.	90 cm.	60 cm.	2.7 m.	2.4 m.
Pindar	2.5 m.	90 cm.	90 cm.	4.0 m.	2.7 m.
Nanda Devi	2.5 m.	1.5 m.	1.1 m.	3.4 m.	3.0 m.
Sunder Dhunga	2.1 m.	1.2 m.	30 cm.	2.9 m.	2.7 m.
Ralam Dhura	-	-	-	90 cm.	-
Hansling	-	-	-	60 cm.	-

Snowfall was below normal in March and above normal in April and May.

SOUTHWEST MONSOON PERIOD - JUNE TO SEPTEMBERJune - JulyI - JAMMU AND KASHMIRNORTH BARAMULLAH DISTRICT

Gulmarg - In June four snowfalls were observed on Handibal and Agharwat mountains. The total precipitation of the month amounted to 5 cm. The snowfall and snow accumulation at the end of the month were above normal in June. No snow fell in July and no snow accumulation was present on Agharwat and Handibal except a few glaciers visible on both the peaks.

SOUTH ANANTNAG DISTRICT

Srinagar - No snow fell during June and July at the station. Snow fell on peaks above a height 3050 m. in both the months and slight snow layers were observed on these peaks. Snowfall on the peaks was above normal during the period.

Patni Top (Batote) - In June one snowfall was observed on high peaks of Eastern Pirpanjal (4086 m. to 4109 m.). Snow was present on Eastern Pirpanjal range at a height 4109 m. at the end of the month. No snow fell in July.

LADAKH DISTRICT

Leh - No snow fell in June and July. Snow accumulation on the passes of height between 5490 m. to 6100 m. varied between 1.2 m. to 1.5 m. and 91 cm. to 1.2 m. at the end of June and July respectively. Snowfall was below normal during the period.

II - THE PUNJAB (I)CHAMBA DISTRICTPangi

Kilar (Pangi Range) - No snow fell both in June and July. Accumulation on Sach Pass (4413 m.) at the end of June was about 60 cm. while at the end of July there was no accumulation. Snowfall was normal during the period.

Churah

Tissa - No snow fell both in June and July.

Bhandal - No snow fell both in June and July.

Tikri - In June one snowfall occurred at a height 4570 m. the depth of snow varying from 8 cm. to 15 cm. Accumulation of snow was conspicuous above a height 4570 m. on high peaks. The accumulation on Drati Peak, Chaurasi Peak and Mehlu Peak were 15 cm., 8 cm. and 5 cm. respectively. Snowfall was below normal in June. No snow fell in July.

Chamba - In June snowstorms occurred on the passes Duga Bhadarwa and Juwali the depths being 5 cm. and 3 cm. respectively. Same amounts are reported as accumulations at the end of the month on these passes. Snowfall was below normal in June. In July no snow fell in the district.

MAHASU DISTRICT

Rampur - No snow fell during both June and July.

MANDI DISTRICT

Mandi Forest Division - No snow fell during both June and July.

III - UTTAR PRADESHTEHRI GARHWAL DISTRICT

No snow fell both in June and July.

ALMORA DISTRICT

In June in Malla Danpur snow fell on high peaks. The following table gives the depths of snowfall in the month and accumulation at the end of the month :-

Name of Peak	Depth of Snowfall in June in cm	Accumulation at the end of June in cm
Kautela	-	15
Kafini	3	8
Bankatia	3	8
Pindar	8	20
Nanda Devi	8	3
Sunder Dhunga	5	15

Snowfall was above normal in June. No snow fell in July.

August - SeptemberI - JAMMU AND KASHMIRNORTH BARAMULLAH DISTRICT

Gulmarg - No snow fell in August but snow accumulation was present on Handibal and Apharwat mountain at the end of the month.

Two snowfalls were experienced in September total depth amounting to 20 cm. on Handibal and Apharwat mountains. Accumulation was above normal at the end of the month. Snowfall was normal in August and above normal in September.

SOUTH ANANTNAG DISTRICT

Srinagar - No snow fell at the station or in the main valley both in August and September. In September snow fell twice on peaks above a height 3040 m. By the end of September peaks were covered with snow.

Patni Top (Batote) - No snow fell both in August and September. No snow accumulation was also present on peaks.

LADAKH DISTRICT

Leh - No snow fell in September. Accumulation of snow on passes at heights from 5490 m. to 6100 m. at the end of September varied from 90 cm. to 1.2 m. Snowfall in this month was below normal. Report for August was not received.

II - PUNJAB (I)CHAMBA DISTRICTPangi

Kilar (Pangi Range) - No snow fell both in August and September. There was no accumulation on Sach Pass (4413 m.) at the end of both August and September. Usually no snow-

fall occurs in these months.

Churah

Tissa - No snow fell both in August and September. Snowfall was below normal in August.

Bhandal - No snow fell in both the months.

MAHASU DISTRICT

Rampur - No snow fell in both the months.

MANDI DISTRICT

Mandi Forest Division - No snow fell during both the months as usual.

III - UTTAR PRADESH

TEHRI GARHWAL DISTRICT

No snow fell during the period.

ALMORA DISTRICT

In Malla Danpur snow fell both in August and September, the amount in August was negligible. The depths of snow in September on the peaks viz. Kafini, Bankatia, Pindar, Nanda Devi and Sunder Dhunga were 15 cm. , 60 cm. , 60 cm. , 60 cm. , and 45 cm. respectively. Accumulation of snow on peaks at the end of August and September were as follows :-

Name of Peak	Accumulation at the end of	
	August	September
Kafini	5 cm.	50 cm.
Bankatia	10 cm.	1.2 m.
Pindar	10 cm.	1.2 m.
Nanda Devi	13 cm.	1.5 m.
Sunder Dhunga	10 cm.	90 cm.

Snowfall was above normal during the period.

POST MONSOON PERIOD - OCTOBER TO DECEMBER

I - JAMMU AND KASHMIR

SOUTH ANANTNAG DISTRICT

Srinagar - In October and November no snow fell at the city proper and in the main valley. Snow fell once on adjoining peaks like Apharwat in October and six to seven times in November. In December snow fell on two days in the valley, the total amounting to 9 cm. Snow fell also on the adjoining peaks in this month. At the end of November all the surrounding peaks except those to the east of the city were covered with thick layer of snow, while at the end of December very thick layer of snow was present on all the surrounding peaks. Snowfall in December was below normal in the main valley and normal on the surrounding peaks.

Patni Top (Batote) - No snow fell in October. Snow fell on two days in November and four days in December. Snowfall occurred on eastern Pirpanjal range (4086 m. - 4109 m.), Ensin Dhar (2704 m. - 3353 m.), Sansar (2286 m.) and Patni Top (2134 m.) in November and in December snow fell on all these places and also on Batote (1575 m.), Kud Peaks (2487 m.) and Kud (1700 m.). At the end of November snow was present on eastern Pirpanjal, Ensin Dhar and Sansar Peaks while at the end of December it was present on all the mountain ranges and peaks, the depth at Patni Top being 15 cm.

LADAKH DISTRICT

Sonemarg - One snowfall occurred in November, the depth being 8 cm. Snowfall in this month was below normal. No reports for October and December were received.

II - THE PUNJAB (I)

CHAMBA DISTRICT

Pangi

Kilar (Pangi Range) - Snow fell on one day in November and two days in December, amounts being 5 cm. and 74 cm. respectively. The corresponding amounts of water (melted snow) were 3 mm. and 10 cm. Accumulations of snow on Sach Pass (4410 m.) at the end of November and December were 60 cm. and 2.4 m. respectively. Snowfall was below normal in November and above normal in December. Report for October was not received.

Churah

Tissa - No snow fell in October. In November snow fell on three days, twice on Satrundi (3368 m.), once each on Bhaniodi (2606 m.) and Khangu (1880 m.), the corresponding amounts being 13 cm., 13 cm., and 5 cm. Snowline descended upto a height of 1980 m. on one day. In December snow fell on four days, the total amounting to 43 cm. Snowline descended upto a height 1680 m. on the last two days in this month. Accumulation at the end of November and December on the passes were as under :-

Name of Pass	Accumulation	
	November	December
Sach Pass (4410 m.)	75 cm.	2.7 m.
Chehni Pass (4570 m.)	90 cm.	2.9 m.
Narali Pass (2740 m.)	15 cm.	1.1 m.

Snowfall was normal in December.

Bhandal - Snow fell twice on Padhri Pass during December, the depth of snowfall being 25 cm. on higher belt and from 15 cm. to 30 cm. on the lower belt. Accumulations of snow at the end of December on Padhri and Ganguhai Pass were 25 cm. and 1.8 m. respectively. Reports for October and November were not received.

Tikri - In December snow fell twice at a height of 1830 m. but twice it was conspicuous at 2130 m. Snowfall was common on every cloudy day above 3050 m. The depth of snow above 2130 m. varied from 15 cm. to 2.1 m. Accumulations of snow at Drati and Chaurasi Peaks were 2.1 m. and 1.5 m. at the end of December. Snowfall was below normal in December. Reports for October and November were not received.

Lower Chamba - There were four snowfalls in December on Basodhan, Duga Bhadarwa and Juwali and the respective depths of snow were 60 cm., 97 cm. and 1.3 m. The same

amounts are reported as accumulations at the end of the month on these passes. Snow line descended upto a height 1680 m. in this month. Snowfall was below normal in December. Reports for October and November were not received.

MAHASU DISTRICT

Chopal - In December there was one snowfall of 10 cm. The snowline descended upto a height 1680 m. The depth of snowfall on Chur Dhar was 1.2 m. while that on Khirki Chhattar and Talra was 91 cm. each and snowfall was accompanied with high winds. Accumulation of snow at the following places at the end of December was as under :-

Name of Place	Accumulation

Chopal	10 cm.
Chur	1.2 m.
Khirki	90 cm.
Chattar	90 cm.
Talra	90 cm.

Snowfall was below normal in December. No reports for October and November were received.

Kilba-Kailash - In November snow fell at Sangla and Purbani, the amounts being 14 cm. and 11 cm. respectively. Reports for October and December were not received.

Rampur - No snow fell during October and November. In December snow storm took place on the last day of the month and snowline descended upto a height 1520 m. Depth of snow on Daran Ghati was 90 cm. The same amount is reported as accumulation Daran Ghati at the end of the period.

Kumarsain - In December snowline descended upto a height 2130 m. The depth of snowfall at Narkhanda was 30 cm. which was also reported as accumulation at the end of the period. Snowfall was below normal in December. Reports for October and November were not received.

Suni - In December snow fell on the last two days, total being 90 cm. Snowline descended upto a height 1830 m. Depth of snowfall at Shali Dhar Peak (3050 m.) was about 90 cm. and the same was also reported as accumulation at the end of the period. Snowfall was above normal in December. Reports for October and November were not received.

Lower Pabar Range - In November at Khadralla snow fell on one day, amount being 6 mm. and the same amount was reported as accumulation at the end of the month. No snow fell at Bashla. Snowfall was below normal in November. In December snow fell on two days each at Khadralla and Bashla, the corresponding total amounts being 48 cm. and 10 cm. The same amounts are reported as accumulations at Khadralla and Bashla at the end of the period. Snowfall was above normal in December. Report for October was not received.

Rohru - No snow fell in December. Accumulation of snow at the end of December at Sangri and Changgal were 30 cm. and 60 cm. respectively. Reports for October and November were not received.

Arki - No snow fell in November. In December snow fell on one day on 30th at Baridhar, the depth being 8 cm. The same amount is reported as accumulation at the end of the period at Baridhar. Snowfall was normal in December. Report for October was not received.

Solan - No snow fell in November. In December snow fell only on the last day amounting to 3 cm. Snowfall of 5 cm. also took place on Karol Peaks which melted away on the next day. Report for October was not received.

Kot-Khai - In December 15 cm. to 45 cm. of snow fell on 30th on the peaks viz. Naira Peak (2290 m.), Joshla (2590 m.), Mundroo (2440 m.), Kharapathar (2590 m.) and Bagi (2590 m.). This snowfall proved very useful to the standing crop. Snowfall was earlier this year. Reports for October and November were not received.

Jubbai - Snow fell only on the last day in December, the amount being 5 cm. Accumulation at the end of December was 5 cm. at Jubbai and 60 cm. at Chambi Kupaar, the highest peak of the Tehsil. The snowfall was below normal in December. Reports for October and November were not received.

Jubbai Forest Division - Snow fell on the last two days in December and snowline descended upto a height 1890 m. The depths of snowfall and accumulation at the end of December at some places in the region were as given under :-

Name of Place	Depth of Snowfall in December	Accumulation at the end of December
Chopal (2290 m.)	10 cm	-
Khirkhi (2440 m.)	1.1 m	-
Bhog (2130 m.)	10 cm	-
Deya (2230 m.)	15 cm	-
Sarain (2209 m.)	1.5 m.	75 cm
Mandha Ghati (2500 m.)	1.8 m	8 cm
Chhachpur (2112 m.)	30 cm	-
Jubbai (1950 m.)	10 cm	-
Ori Pass (2680 m.)	30 cm	-
Bharach Pass (3080 m.)	40 cm	20 cm
Banah (2130 m.)	30 cm	30 cm
Kauda (2130 m.)	25 cm	-
Manalag (2530 m.)	60 cm	60 cm
Lutkari (2440 m.)	45 cm	-
Reoshti (2290 m.)	28 cm	45 cm
Bhalu (1890 m.)	8 cm	-
Bhog Dhar (2286 m.)	-	20 cm
Talra (3223 m.)	-	3.0 m

Snowfall was normal during December. No reports for October and November were received.

KANGRA DISTRICT

Serai - In November there were two snowfalls on Sirikhand Peak, total falls being 60 cm. The same amount was reported as accumulation on Sirikhand. Reports for October and December were not received.

Nirmand - There were two snowfalls during December and snowline descended upto a height 1220 m. The following table gives the depths and accumulations of snowfall in December on some peaks in the region :-

Name of Peak	Depth of Snowfall	Accumulation
Sirikhand	1.8 m	4.6 m
Chol	90 cm	90 cm
Maghan	75 cm	75 cm
Dundku	75 cm	75 cm
Shikar	60 cm	60 cm
Ramgarh	15 cm	15 cm
Nohun	30 cm	30 cm

MANDI DISTRICT

Mandi Forest Division - No snow fell in October and November. In December snow fell on two days and the depths of snowfall on Tungasi (3050 m.), Parasar Dhar (2740 m.) and Shikari (3350 m.) were 60 cm., 60 cm., and 1.0 m. respectively. The same amounts were reported as accumulations at these places at the end of the period. The snowfall was above normal in December.

III - UTTAR PRADESH

TEHRI GARHWAL DISTRICT

No snow fell in October and November. It snowed only on the last day in December on the peaks of Bhanolti, Surkenda, Nagtiba and Taru-ka-Kanda the depth of snow amounting to 15 cm. to 20 cm. Snowfall was normal in December.

GARHWAL DISTRICT

There was only one snowfall in December the depth varying between 30 cm to 1.2 m. The same amount was reported as accumulation. The snow line descended to a height of 2130 m. Snowfall was above normal in December. Reports for October and November were not received.

ALMORA DISTRICT

The following table gives the depths of falls and accumulations at the end of each month. Snowfall was above normal during the period.

Locality	October		November		December	
	Depth	Accumulation	Depth	Accumulation	Depth	Accumulation
Kafini Peak	1.8 m	1.1 m	1.9 m	0.7 m	0.8 m	2.0 m
Bankatia Peak	3.1 m	1.8 m	3.8 m	0.8 m	0.9 m	3.8 m
Pindar Peak	2.9 m	1.7 m	2.9 m	1.4 m	1.5 m	2.9 m
Nanda Devi	3.5 m	2.0 m	3.6 m	1.5 m	1.7 m	3.7 m
Sundardhunga	2.7 m	1.8 m	2.8 m	1.2 m	1.4 m	3.1 m
Kautela	0.6 m	0.6 m	0.7 m	0.1 m	0.5 m	1.2 m

S U M M A R YCold Weather Period - January and February :-

Snowfall during the period was below normal in Jammu and Kashmir and Uttar Pradesh and slightly below normal in Punjab (I).

Hot Weather Period - March to May :-

Snowfall was above normal in Jammu and Kashmir and in Uttar Pradesh and slightly below normal in Punjab (I).

Monsoon Period - June and July :-

Snowfall in this period was normal in Jammu and Kashmir, Punjab (I) and in Uttar Pradesh.

Monsoon Period - August and September :-

As usual very little snow fell in Jammu and Kashmir, Punjab (I) and in Uttar Pradesh.

Post Monsoon Period - October to December :-

Snowfall in this period was below normal in Jammu and Kashmir, and in Punjab (I) and above normal in Uttar Pradesh.

-O-O-O-O-

N.B. :- It is not possible to adopt a single classification of seasons which will be satisfactory for the whole of India. The classification adopted in this publication is, however, considered as the best satisfactory one and the least open to objection especially from the point of view of rainfall.

SG/Rotaprinted.